

Homework Sheet - Solving by Factoring

$$1a.) 8x^2 + 4x = 0$$

$$\underline{4x(2x+1)} = 0$$

$$\frac{4x}{4} = \frac{0}{4}$$

$$x = 0$$

$$\underline{\text{OR}} \quad 2x+1=0$$

$$2x = 0-1$$

$$\frac{2x}{2} = \frac{-1}{2}$$

$$x = -\frac{1}{2}$$

$$2a.) x^2 + 10x + 24 = 0$$

$$\underline{(x+6)(x+4)} = 0$$

$$x+6=0 \quad \underline{\text{OR}} \quad x+4=0$$

$$x=-6 \quad \quad \quad x=-4$$

$$3b.) 4x^2 - 36y^2 = 0$$

$$4(x^2 - 9y^2) = 0$$

$$4(x-3y)(x+3y) = 0$$

$$x-3y=0 \quad \underline{\text{OR}} \quad x+3y=0$$

$$x=3y \quad \quad \quad x=-3y$$

$$5a.) x^2 - 8x - 20 = 0$$

$$(x+2)(x-10) = 0$$

$$x+2=0 \quad \text{OR} \quad x-10=0$$

$$x=-2 \quad \quad \quad x=10$$



Task for Today

Graph the following parabolas

$$y = x^2 - 10x + 16$$

What are the x-intercepts?

$$y = x^2 + 10x + 16$$

What is the y-intercept?

$$y = x^2 - 10x - 24$$

What is the vertex?

$$y = x^2 - 10x + 24$$

How can we use the zeros (x-intercepts) to find the vertex?

Turn your parabola into a PICTURE!!!!

In summary

$$y = x^2 + 6x + 8$$

M: 8

A: 6

N: 2, 4

$$y = (x + 2)(x + 4)$$

∴ x-intercepts are
-2, -4

to find vertex, find the middle

$$x: \frac{-2 + (-4)}{2}$$

$$\frac{-6}{2}$$

$$-3$$

y: plug -3 back into equation

$$y = x^2 + 6x + 8$$

$$y = (-3)^2 + 6(-3) + 8$$

$$= 9 - 18 + 8$$

$$= -1$$

∴ vertex (-3, -1)